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ABSTRACT

The nine microcomputer statistical software packages that are described comprise the statistical software collection at the Appalachia Educational Laboratory (AEL). The packages are compatible with AEL's Apple II microcomputer, though many are also available with other microcomputers. References to software reviews are included for some programs. Descriptions of the software programs were synthesized from the commercial literature when practical, and include title, source, author, hardware type, subject, price, and an overview. The following specific programs are described: (1) Econometrics Linear Forecasting (ELF); (2) Edu-Ware Statistics 3.0; (3) Education Stat Pac; (4) 531-CP Start Systems, Version 3.01; (5) INTROSTAT 2.1; (6) Kendall's Coefficient of Concordance, W; (7) SoC and CFSoC Scorer, Version 1.0; (8) Statistics with DAISY; and (9) STATPRO Statistical Package, Edition III, Version III. (LMM)

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STATISTICAL SOFTWARE PACKAGES FOR THE MICROCOMPUTER

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INTRODUCTION

This packet describes nine microcomputer statistical software packages that comprise the statistical software collection at the Appalachia Educational Laboratory (AEL). As hardware dictated, the software packages are compatible with AEL's Apple II microcomputer. However, many of the same software packages are also available with a wide range of other microcomputers (i.e., Atari, TRS-80, etc.). The inclusion of any software package in this listing should not be construed as an endorsement for its use by AEL. References to software reviews have been included when they were available. When practical, descriptions of the software programs were synthesized from the commercial literature.

Title: Econometrics Linear Forecasting (ELF), © 1982
Version 4.0, Vol. 41 & Vol. 42.

Source: The Winchendon Group
3907 Lakota Road
P.O. Box 10114
Alexandria, Virginia 22310
(703) 960-2587

Author: N/A

Hardware Type: Apple II, Basic 48K memory and one disk drive,

Subject: Statistics; Data Analysis; Tables

Price: $200.00

Overview: The Econometric and Linear Forecasting (ELF) System is supplied on two diskettes and allows you to select the statistical operation desired from a menu. The first diskette contains the database-related programs and the second diskette contains the statistical programs. A 79 page manual accompanies this package and provides indepth information on the ELF System. This manual includes a short bibliography of suggested readings in the field of statistical analysis and also which are sources of data for the examples used in the manual. The data set HARMAN'S FIVE is from Harry H. Harman, "Modern Factor Analysis," (Chicago: The University of Chicago Press, 1978, 3rd edition) and called "Five Socio-Economic Factors." TABS TEST is a made up dataset. Another source of test data, not all of which is provided with ELF, is Gudmund R. Iversen and Helmut Norporth, "Analysis Applications in the Social Sciences," (Beverly Hills and London: Sage Publications, 1976). This series is a very good introduction to many statistical techniques available in ELF. The ELF authors say, "IMSL Library Reference Manual," (Houston, Texas: 7th edition) is another source.

UTILITY MENU

SETTING SYSTEM PARAMETERS
CREATING AN ELF DATABASE
CORRECTING DATA AND ADDING NEW VARIABLES
ADDING NEW OBSERVATIONS TO AN EXISTING DATABASE
VARIABLE TRANSFORMATIONS
PRINTING A DATABASE
ELF DATABASE CATALOG
MOVING A DTABASE TO ANOTHER DISKETTE
NUMERIC KEYPAD

(Continued)

(ELF) (Continued)

STATISTICAL MENU

ANALYSIS OF VARIANCE: ONE-WAY, TWO-WAY
CORRELATION
DISCRIMINANT ANALYSIS
FACTOR ANALYSIS
PROBABILITIES OF T. F. CHI SQUARE AND NORMAL DISTRIBUTIONS
SCATTERGRAM
SIMPLE STATISTICS
STEPWISE REGRESSION
T-TEST ON MEANS
TABLES

1. Analysis of Variance [ANOVA1(1)]: This module performs a one-way analysis of variance (ANOVA). The variable to be analyzed must be continuous: the explanatory (treatment) variable must be categorical. In one-way ANOVA there can be only one treatment.

2. Analysis of Variance [ANOVA2(2)]: This module does a two-way analysis of variance (ANOVA) with two treatments. Both treatments are categorical variables while the variable to be analyzed must be continuous.

3. Correlation: This program calculates correlation coefficients and presents them in a matrix format. A correlation coefficient is a way of measuring the relationship between two variables and ranges from -1.0 to +1.0.

4. Discriminant Analysis: This program performs discriminant analysis, a statistical technique used to classify observations into categories. One use of this is to use past experience to predict who will pay off credit and who will not: those applicants predicted into the poor risk category are not offered credit. In general, discriminant analysis can be used for more than two categories, and ELF will use some information in the database to estimate the discriminant functions and predict using others.

5. Factor Analysis: "Factor Analysis" is a statistical technique to analyze the variation in a set of variables. For further information about it, consult the references suggested in the bibliography.

6. Probabilities of T. F. Chi Square and Normal Distributions: The probabilities program calculates the significance level of the normal distribution, and statistics with T. F. and Chi square distributions. Only one type of distribution can be used in a run, although many of that type can be done.

(Continued)

(ELF) (Continued)

7. Scattergram: This program performs a univariate regression which is then plotted on the screen (if your computer has one) along with the actual observations. At the user's option, the location of zero is indicated with horizontal and/or vertical lines if it is one one or both axes. The graph is automatically scaled.

8. Simple Statistics: The "Statistics" program allows you to obtain univariate statistics on the variables in a database. It automatically tells you the number of observations in the file and optionally calculates the mean (average), variance, standard deviation, standard error, minimum, maximum, range, sum, skewness and kurtosis. Where there are two ways to calculate a statistic, such as the standard deviation, the "n-1" formula is used instead of the "n" version. This implies that a sample is being used, not the entire population. In most cases this is correct. If there are a large number of observations, the difference between the two formulas is negligible for practical purposes.

9. Stepwise Regression: This program performs a regression (sometimes called a multivariate regression, ordinary least squares or curve fitting) using a stepwise technique to enter and to remove variables one-by-one at the user's direction. You may start with all the independent variables in the regression or they may all be out.

10. T-Test on Means: This program places observations into one of two categories according to a grouping variable. It then reports the statistics necessary to determine if the mean(s) of variable(s) for each group differs from the other. For example, one could use this technique to see if the average score on a test differs by sex, or if people weighing over 200 pounds have different average IQs from those weighing less than this.

11. Tables: The "Tables" program allows you to create crosstables or cross classification tables. You could count the number of people by race, sex, and age, or just race and sex. You could classify members of the United States Senate by political party and how they voted on a given bill. "Tables" allows you up to three independent classification variables.

Bibliography: While the manual attempts to explain how to use ELF, it's writers suggest the user obtain a basic understanding of the problems and approaches represented by ELF's modules by studying the following bibliography:

For statistics from Norman Nie, et al., STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES (New York: McGraw-Hill, 1972, 2nd edition.).

For regressions, R.S. Pindyck and D.L. Rubinfeld, ECONOMIC MODELS AND ECNOMIC FORECASTS (New York: McGraw-Hill, 1980, 2nd edition) is helpful.

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(ELF) (Continued)

On factor analysis, the latest edition of Harry H. Harman, MODERN FACTOR ANALYSIS (Chicago: The University of Chicago Press, 1978, 3rd edition) is the definitive work.

An easier to read general statistics book is William L. Hays, STATISTICS (New York: Holt, Rinehart and Winston, 1981, 3rd edition). Hubert M. Blalock, Jr. SOCIAL STATISTICS (New York: McGraw-Hill, 1979, Revised Second Edition) is also good.

Title: Edu-Ware Statistics 3.0, © 1980

Source: Edu-Ware Services, Inc.
22222 Sherman Way
Suite 102
Canoga Park, California 91303
(213) 346-6783

Author: Sherwin Steffin, et al.

Hardware Type: Apple II Plus with Applesoft, DOS 3.2 and DOS 3.3, 48K

Subject: Statistics

Price: $29.95

Overview: This program provides teachers, university students, and scientific and technical professionals with the means to quantify and evaluate mathematical relationships.

It features interactive menus which grant the user control in setting calculations. The user can save data to text file; edit or modify data as needed; and build new files. Direct access to any slot-controlled printer allows hard-copy printouts of all data.

A six page documentation leaflet gives a brief introduction to Statistics 3.0, a three step guide to using the system, and some general background on the six statistical programs and their applicability to the user.

EDU-WARE STATISTICS 3.0 MENU

MEAN, VARIANCE, AND STANDARD DEVIATION
CORRELATION COEFFICIENT (Pearson Product Moment Correlation)
NORMAL DISTRIBUTION - PROBABILITY AND FREQUENCY
THE CHI-SQUARE DISTRIBUTION (Tail End and Percentile Values)
CHI-SQUARE TEST
T-TEST

(This program was reviewed in Byte, Oct 1982, pgs. 400, 404.)

Title: Education Stat Pac, ©1982*

Source: Mr. Carl F. Berger, Associate Dean
School of Education
University of Michigan
Corner East and South University Avenues
Ann Arbor, Michigan 48109
(313) 764-9470

Author: Carl Berger, Mark Shermis, and Paul Stemmer

Hardware Type: Apple II Plus, 48K, DOS 3.3

Subject: Statistical Analysis; Data Analysis, Data Plotting

Price: See Overview for explanation.

Overview: Attendance at two mini-training courses presented at the 1982 American Educational Research Association (AERA) Annual Meeting on "The Uses of Microcomputers in Gathering, Analyzing, and Displaying Data and Results of Educational Research;" are pre-requisities to owning this software package developed at the University of Michigan. Two manuals were developed for the mini-training sessions and distributed to the participants. One course manual focuses on gathering data using the microcomputer, while the other manual is about analyzing data using the microcomputer.

* Personal copy of Dr. Merrill Meehan.

Title: 531-CP Stat Systems, Version 3.01

Source: Psychological Assessment Resources, Inc.
17408 Gunn Highway
P.O. Box 98
Odessa, Florida 33556
(813) 920-6357

Author: R.R. Belanger, Ph.D.

Hardware Type: Apple II, DOS 3.3, Applesoft, 48K, one disk drive, printer

Subject: Statistics; Data Analysis

Price: $324.50 (with shipping & handling)

Overview: This system is comprised of seven complete statistical methods (seven diskettes and seven manuals) to use in setting up a design to determine the presence and degree of an effect in an experiment. All of the programs are "menu" selected from a master diskette and are linked in such a way as to minimize the effort in running the system. The seven statistical methods that comprise this package are: (1) Analysis of Covariance, (2) Matrix Manipulation, (3) Analysis of Variance, (4) Analysis of Variance (W+B), (5) Multiple Regression, (6) Factor Analysis, and (7) Discriminant Function. Overviews on each statistical method follow with a sample menu.

1. Analysis of Covariance: The "Analysis of Covariance" package is a complete data analysis system. It contains ten programs. Four of the programs are used in the storage and update of data, maintained on diskettes. Three programs are used to calculate and display the results, and three additional programs support and integrate the system. The output includes: source, degrees of freedom, mean square and F ratios for covariate(s), main and interaction effects.

Everything that can be done with the ANALYSIS OF COVARIANCE system is listed in a menu which has eight choices. It appears on the monitor screen as:

ANALYSIS OF VARIANCE-COVARIANCE MENU

SYSTEM CONFIGURATION	PRINT DATA OBSERVATIONS
CREATE A NEW SET OF DATA DISKETTES	RERUN ANALYSIS
CHECK OR UPDATE OBSERVATIONS	MAKE A DATA TRANSFORMATION
ANALYSIS OF VARIANCE-COVARIANCE	QUIT SYSTEM

2. Matrix Manipulation: The "Matrix Manipulation" package consists of two programs, both of which are menu driven.

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513-CP (Continued)

The output is of the form (I,J) = X. The "I" refers to the row of the matrix and the "J" is the column, and the "X" represents the actual value stored at the row, column position. (Note that the "transpose" of a matrix is one in which the row and column positions are interchanged.) The menu provides for the chaining of operations, that is, an indefinite sequence of matrix operations can be performed.

MATRIX MANIPULATION MENU

ADD MATRICES 'A' AND 'B'
SUBTRACT MATRICES 'A' AND 'B'
TRANSPOSE MATRIX 'A'
MULTIPLY MATRIX 'A' BY A CONSTANT
MULTIPLY MATRICES 'A' and 'B'
COMPUTE THE INVERSE OF MATRIX 'A' (Solution for system of equations)
QUIT MENU

3. Analysis of Variance (W+B): The "Analysis of Variance (W+B)" package contains seven programs. Three of the programs are used in the storage and updating of data, maintained on diskettes. Three programs are used to calculate and display the results, and one additional program supports and integrates the system.

The output includes: source, sum of squares, degrees of freedom and mean squares for main and all lower and high order interaction effects.

Everything that can be done with the "Analysis of Variance (W+B)" system is listed in a menu which has eight choices.

ANALYSIS OF VARIANCE MENU

SYSTEM CONFIGURATION
CREATE A NEW SET OF DATA DISKETTES
CHECK OR UPDATE OBSERVATIONS
ANALYSIS OF VARIANCE (W+B)
PRINT DATA OBSERVATIONS
RERUN ANALYSIS
MAKE A DATA TRANSFORMATION
QUIT SYSTEM

4. Analysis of Variance: The "Analysis of Variance" package contains ten programs. Four of the programs are used in the storage and updating of data, maintained on diskettes. Three programs are used to calculate and display the results, and three additional programs support and integrate the system.

The output includes: source, degrees of freedom, mean square and F ratios for main and interaction effects.

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Everything that can be done with the "Analysis of Variance" system is listed in a menu which has eight choices.

ANALYSIS OF VARIANCE MENU

SYSTEM CONFIGURATION
CREATE A NEW SET OF DATA DISKETTES
CHECK OR UPDATE OBSERVATIONS
ANALYSIS OF VARIANCE
PRINT DATA OBSERVATIONS
RERUN ANALYSIS
MAKE A DATA TRANSFORMATION
QUIT SYSTEM

5. Multiple Regression: The "Multiple Regression" package contains ten programs. Four of the programs are used in the storage and updating of data, maintained on diskettes. Three programs are used to calculate and display the results, and three additional programs support and integrate the system.

The output includes: multiple correlation coefficient, standard error, regression coefficients, and F ratio. Also included are the means, standard deviations, and correlations. Up to 100 variables can be analyzed, and there is no limit to the number of cases or observations.

Everything that can be done with the multiple regression system is listed in a menu which has ten choices.

MULTIPLE REGRESSION SYSTEM MENU

SYSTEM CONFIGURATION
CREATE A SET OF VARIABLE DISKETTES
PREPARE A NEW DISKETTE TO BE ADDED TO AN EXISTING SET OF VARIABLE DISKETTES
CHECK OR UPDATE OBSERVATIONS
ADD OBSERVATIONS TO AN EXISTING SET OF VARIABLE DISKETTES
RUN A MULTIPLE REGRESSION ANALYSIS
REDO A MULTIPLE REGRESSION ANALYSIS
PRINT DATA OBSERVATIONS
MAKE A DATA TRANSFORMATION
QUIT SYSTEM

6. Factor Analysis: The "Factor Analysis" package is a complete analysis system. It contains 14 programs. Four of the programs are used in the storage and updating of data, maintained on diskettes. Seven programs are used to calculate and display the results, and three additional programs support and integrate the system.

The output options include: principal components, varimax simple structure, orthogonal powered-vector simple structure, weighted cross-factor simple structure and oblique reference structure. Where appropriate

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531-CP (Continued)

latent roots and percent of the variance accounted for by each factor, as well as communalities are outputed. Input can be either raw data stored on diskettes, or correlation coefficients. Up to 60 variables and 40 factors can be analyzed and there is no limit to the number of cases or observations.

The menu consists of 16 choices and appears on the screen as:

FACTOR ANALYSIS SYSTEM MENU

SYSTEM CONFIGURATION
CREATE A SET OF VARIABLE DISKETTES
ADD A VARIABLE DISKETTE
CHECK OR UPDATE OBSERVATIONS
ADD DATA OBSERVATIONS
RUN FACTOR ANALYSIS #1
RUN POWERED-VECTOR (R on disk)
RUN VARIMAX (R on disk)
RUN PRINCIPAL COMPONENTS (R on disk)
RUN COMMUNALITIES-SQR MULT CORR
RUN COMMUNALITIES-MAX ROW
RUN COMMUNALITIES-UNITS
PRINT DATA OBSERVATIONS
MAKE A DATA TRANSFORMATION
QUIT SYSTEM

7. Discriminant Function: The "Discriminant Function" package is a complete data analysis system. It contains nine programs. Four of the programs are used in the storage and updating of data, maintained on diskettes. Two programs are used to calculate and display the results, and three programs support the system.

The output includes: discriminant function coefficients, variance of the discriminant function, cutoff point, and F ratio.

The menu consists of nine choices and appears on the screen as:

DISCRIMINANT FUNCTION SYSTEM MENU

SYSTEM CONFIGURATION
CREATE A SET OF VARIABLE DISKETTES
ADD A VARIABLE DISKETTE
CHECK OR UPDATE OBSERVATIONS
ADD DATA OBSERVATIONS
RUN DISCRIMINANT FUNCTION ANALYSIS
PRINT DATA OBSERVATIONS
MAKE A DATA TRANSFORMATION
QUIT SYSTEM

Title: INTROSTAT 2.1, © 1982

Source: MicroStat Software
P.O. Box 172
Concord, Massachusetts 01742

Author: Scott Herriott

Hardware Type: Apple II and Apple II Plus, Applesoft, 48K, DOS 3.3

Subject: Statistics; Behavioral Sciences

Price: $75.00

Overview: "Introstat 2.0" performs the following functions: simple descriptive statistics, two-way contingency tables with chi-square test, two types of t-tests, Mann-Whitney U test, Wilcoxon test, one- and two-way ANOVA, correlation and simple linear regression, two-dimensional scatterplot with best fit line, and random sampling from a large data file. They cover the topics usually presented in an introductory undergraduate or graduate statistics course. The user is given the opportunity to adjust some of the program parameters, such as the number of decimal places displayed, the type of variance formula used, and the width of the output display when a printer is used. The programs allow a user-defined missing data value, the ability to append separate data files, data transformations, and the creation of new variables from computations involving combinations of existing variables. A sample data file, included on the disk, lets the new user begin working with the programs immediately. A 40-page user's manual accompanies the disk. The manual includes examples of sample runs.

Within each INTROSTAT program, a sub-menu of program options is presented which details options for defining tasks which allow the return to a higher level menu.

(This package was reviewed in "Ed Tech Product Reviews," Educational Technology, March 1982, pg. 50.

Title: Kendall's Coefficient of Concordance, W (1983)

Source: Dr. Joe Shively
Appalachia Educational Laboratory
P.O. Box 1348
Charleston, West Virginia 25325
(304) 347-0414

Author: Tom Young

Hardware Type: Apple II Plus, DOS 3.3

Subject: Statistics; Correlational Techniques; Ranking

Price: $19.95

Overview: This AEL developed program uses Kendall's Coefficient of Concordance, W, to determine the relationship among three or more sets of ranks, without having to use multiple sets of Spearman rank-order coefficients. A relevant reference is Basic Statistical Methods; Second Edition, 1965; N.M. Downie and R.W. Heath; Harper & Row.)

This is a self-activating program which requires no menu; insertion of the disk takes the user to the first question. Data entry is keyboard generated and displayed visually, but not printed. This program handles up to 10 raters and 15 projects.

Title: SoC and CFSoC Scorer, Version 1.0, © 1982

Source: Stephen Brickley
305 Anthony Road
King of Prussia, Pennsylvania 19406
(205) 265-4393

Author: Stephen W. Brickley

Hardware Type: Apple II, 48K (Applesoft), at least one disk drive (DOS 3.3), Slot 6, Apple Silentype Printer in Slot 1.

Subject: Program Specific Data Analysis and Profile Gereration

Price: $50.00

Overview: This scoring and profile generating program was written and developed for two specific paper and pencil instruments. They are: (1) "Stages of Concern Questionnaire" (SoCQ 54, 6/811) and (2) "Change Facilitator's Stages of Concern Questionnaire." Both of these instruments are components in the concerns based adoption model developed by researchers at the R & D Center for Teacher Education at the University of Texas at Austin. The author wrote this software with permission of the developers of the CBAM Program at the University of Texas, Austin. Raw data from each completed instrument is entered from the keyboard. The program analyzes the data, displays the results on the video screen, and then prints a profile for the respondent's results. There is an option to have the program complete a group summary and generated group profile. Accompanying the diskette is a four page documentation of the software.

Title: Statistics with DAISY

Source: Rainbow Computing, Inc.
Mail Order Department
19517 Business Center Drive
Northridge, California 91324
(213) 349-0300

Author: Kevin C. Killion

Hardware Type: Apple II, 48K, DOS 3.3, Applesoft

Subject: Statistics, Statistical Analyses, Plottting Data

Price: $82.45 (includes shipping)

Overview: "Statistics with DAISY" is a comprehensive interactive statistics package suitable for business, scientific, and social sciences, that is relatively easy to use. DAISY stands for Data Analysis and Interactive Statistics. It consists of 14 utility commands and seven file commands. There are over 75 four-character commands to handle correlations, analysis of variance, hypothesis testing, and elementary statistics. A 50 page manual provides information on: reading or writing data from your own program other than a DAISY file; variable names used with appropriate explanations; DOS modifications; and memory usage locations. The manual also supplies sample data to walk the user through a series of steps that highlight features of the package.

Full user assistance facilitates HELP and INFO.
Mathematical and time-series transforms.
Hi-Res plots.
Elementary statistics (mean, standard deviation, etc.).
Correlations.
Multiple regression (6 different procedures).
Model testing and evaluation.
Nonparametric statistics.
Hypothesis testing.
Analysis of variance.
Users can add own programs as new DAISY commands.
Disk commands to save, enter, examine, overlay data.
Active data is in RAM for quick access.
Data table can be set for dozens of variables or hundreds of observations; default is 10x272

(This program was reviewed in The Computing Teacher, April, 1982, pg. 54.)

Title: STATPRO Statistical Package, Edition III, Version III, © 1981

Source: Blue Lakes Computing
3240 University Avenue
Madison, Wisconsin 53715

Author: Mark A. Imhof et al.

Hardware Type: Apple II, Apple III, 64K; 2 disk drives, printer (Can also be used with the PROFILE or CORVUS hard disk units.)

Subject: Statistics; Questionnaries

Price: Approximately $800.00

Overview: The STATPRO statistical package is written in Pascal for the Apple II and Apple III microcomputers. It comes packaged in binders which hold the numerous diskettes that comprise the package. A separate 163 page binder contains the documentation. STATPRO consists of the following modules: MAILMOD, BIBLIOMOD, INVENMOD, QUESTMOD, and STATMOD. However, at the present time, AEL's STATPRO package contains two modules, QUESTMOD and STATMOD which consist of nine diskettes.

QUESTMOD is a professional questionnaire system (PQS) designed for entry and analysis of ordinal data from a questionnaire. The PQS database can handle over 3000 records per diskette and over 100,000 records on a ten mbyte CORVUS. Each record consists of up to 79 questions with a range of 1-9 answers per question. It performs cross tabulation, contingency analysis descriptive standard errs, confidence limits, coefficients of variation and rel-variances, and cost efficiency analysis (comparison of precision estimates against cost curves). It includes graphics of histograms, piecharts, descriptive plots, and quadrant scanning.

STATMOD (PSS) performs data transformations, a variety of comparative and descriptive statistics, and graphics using the real number database. Its statistical programs include:

CROSS TABULATION
CONTINGENCY ANALYSIS
DESCRIPTIVE STATISTICS
ANALYSIS OF VARIANCE
NON-PARAMETRIC STATISTICS
NORMALITY TESTS
LINEAR
NON-LINEAR
MULTIPLE AND STEPWISE MULTIPLE REGRESSION
RESIDUAL ANALYSIS

(Continued)

STATPRO (Continued)

MOVING AVERAGES AND VARIANCES
CORRELATION
SUMS OF SQUARES AND COVARIANCE MATRICIES
COMPARATIVE STATISTICS (including T-twsts, F-tests, tests of correlation, covariance, skewness, kurtosis, and Spearman rank correlation coefficient)

Graphics include scatter plotting, histograms, descriptive plotting (means, standard deviations, standard errs), range plotting (minimums, quartiles, medians, maximums), normality plotting, moving averages and errs, cost efficiency analysis and plots, fitted regression curves, residual plots, and fitted polynomial plots.

SAMPLE STATISTICAL MENU

CROSS TABULATION/CONTINGENCY ANALYSIS DESCRIPTIVE AND COMPARATIVE STATISTICS
LINEAR AND NON-LINEAR REGRESSION
STATISTICAL MATRICES
MULTIPLE AND STEPWISE REGRESSION
RESIDUAL ANALYSIS FOR MULTIPLE MODELS
ANALYSIS OF VARIANCE
NORMALITY TESTING OF DATA/RESIDUALS RANGE STATISTICS
NON-PARAMETRIC COMPARISONS
TIME SERIES ANALYSIS